

Indian Association of Teachers in Biological Sciences
NATIONAL STANDARD EXAMINATION IN BIOLOGY 2010-2011
Date of Examination 28 November 2010
Time 15.00 to 17.00

- Q.1** A species of plant “A” with chromosome number 20 is crossed with another species “B” having chromosome number 16 and when the chromosome number in the zygote was doubled, it produced a fertile hybrid “C”. The number of chromosome in each cell of endosperm of “C” will be -
 (A) 36 (B) 54 (C) 90 (D) 108

Ans. (A)

- Q.2** For perception of depth, the eyes should better be -
 (A) several and scattered all over the head (B) two and facing opposite each other
 (C) two and facing same direction (D) several and facing same direction

Ans. (C)

- Q.3** A few properties of various transport systems of cells are given in the table below. Choose from the options to determine the type of transport systems that T1 and T2 represent.

Property	T1	T2
Carrier mediated	+	+
Against the concentration gradient	-	+
Specificity	+	+
Energy expended	-	+
Solute modified during transport		

- (A) T1 : passive diffusion, T2 : facilitated diffusion
 (B) T1 : passive diffusion, T2 : active transport
 (C) T1 : active transport, T2 : facilitated diffusion
 (D) T1 : facilitated diffusion, T2 : active transport

Ans. (D)

- Q.4** One can distinguish a leaflet from leaf by the absence of -
 (A) midrib (B) petiole (C) axillary bud (D) venation

Ans. (C)

- Q.5** What can result in rapid construction of muscle mass ?
 (A) Isotonic exercise (B) Anaerobic exercise
 (C) Cardiovascular exercise (D) Diet free of fat

Ans. (B)

- Q.6** Gap junction is one type of cell - cell communication that allows passages of smaller molecules. Which of the following will not pass through gap junction ?

- (A) Glucose and glutamate (B) K⁺ ions and amino acid
 (C) Glycogen and insulin (D) Nucleotides and vitamins

Ans. (C)

Q.7 Consider the following human disorders:

- i. Haemophilia ii. Down's Syndrome iii. Cystic fibrosis
iv. Colour blindness v. Night blindness.

Which of these disorders exhibit 'Mendelian' pattern of inheritance?

- (A) ii, iii and iv (B) i, ii and iii (C) i, iii and v (D) i, iii and iv

Ans. (D)

Q.8 The optimum temperature for photosynthesis and the optimum temperature of respiration lie somewhere in the range of 5 to 35 °C. Which of the following statement is correct ?

- (A) Optimum temp. for photosynthesis < optimum temp. for dissimilation
(B) Optimum temp. for photosynthesis = optimum temp. for dissimilation
(C) Optimum temp. for photosynthesis > optimum temp. for dissimilation
(D) For photosynthesis optimum light while for respiration optimum temp. is necessary

Ans. (B)

Q.9 All the following are forms of connective tissue except -

- (A) squamous tissue (B) adipose tissue (C) lamellar bone (D) lymph

Ans. (A)

Q.10 During development, the left precaval vein in man forms the -

- (A) coronary artery (B) coronary sinus (C) coronary vein (D) sinus venosus

Ans. (B)

Q.11 The correct sequence of stages in the development of fish is -

- (A) hatchling - fingerling - fry - spawn (B) spawn - hatchling - fry - fingerling
(C) hatchling - spawn - fry - fingerling (D) fry - spawn - hatchling - fingerling

Ans. (C)

Q.12 Vaccination involves the administration of weakened forms of certain viruses. The vaccinated organisms will then become more resistant to these viruses. This is an example of

- (A) viral interference (B) interferon mediated viral resistance
(C) a retroactive virus (D) preventive viral resistance

Ans. (A)

Q.13 Find the set of composite fruit among those listed below -

- (i) Gooseberry (ii) Mulberry (iii) Jackfruit (iv) Blackberry
(v) Pineapple (vi) Fig
(A) i, ii, iii, iv, v, vi (B) i, ii, iii, v, vi (C) ii, iii, iv, vi (D) iii, v, vi

Ans. (D)

Q.14 Find the odd series out -

- (A) seminiferous tubules, prostate glands, preputial glands
(B) gastric glands, crypts of Liberkuhn, pancreatic acini
(C) sudoriporous glands, sebaceous glands, mammary glands
(D) lacrimal glands, ceruminous glands, salivary glands

Ans. (A)

- Q.15** Diploid spores are produced only by
(A) mosses (B) rusts
(C) gymnosperms (D) angiosperms
Ans. (B)
- Q.16** A man and women are both affected by vitamin D resistant rickets, which is a dominant sex-linked allele. All of the female offsprings of this couple are affected with rickets but some of the male offsprings are not. What are the genotypes of the parents?
(A) Both are homozygous for the trait
(B) The woman has two dominant alleles and man has one dominant allele
(C) Both parents have only recessive alleles
(D) Each parent has only one dominant allele
Ans. (D)
- Q.17** A plant with genotype AABbCcDD is self pollinated. Provided that the four genes are independently assorting, what proportion of the progeny will show the genotype AAbbccDD ?
(A) 1/4 (B) 1/16
(C) 1/64 (D) 1/256
Ans. (B)
- Q.18** A plant biochemist received a specimen from a fellow scientist who noticed that the plant's stomata are closed during the day. The biochemist observed that radioactive carbon supplied in the form of carbon dioxide fed to the plant at night, was first found in organic acids that accumulated in the vacuole. During the day, the label moved to sugars being manufactured in the chloroplast. What was the conclusion of the biochemist ?
(A) It is a CAM plant (B) It is a C4 plant
(C) It is a C3 plant (D) It is a plant showing pentose phosphate pathway
Ans. (A)
- Q.19** In which animals is the volume of the lungs relatively constant during all the stages of breathing ?
(A) Insects (B) Reptiles
(C) Mammals (D) Birds
Ans. (D)
- Q.20** All of the following are four carbon compounds except -
(A) malic acid (B) succinic acid
(C) pyruvic acid (D) oxaloacetic acid
Ans. (C)
- Q.21** During a cell cycle, the transition from G1 to S phase and from G2 to M phase requires the activation of which of the following ?
(A) Kinase enzyme (B) ATP molecules
(C) Cyclins (D) Cyclin-CDK complex
Ans. (D)

- Q.22** Which of the following statements are **correct** for beta-carotene ?
(i) traps light energy
(ii) is an important constituent of membranes
(iii) senses light in plants and also causes their parts to grow towards or away from light
(iv) in humans it can be broken down into two Vitamin A molecules traps light energy and converts it into chemical energy
(A) ii, iii (B) iii, iv (C) i, iii, iv (D) ii, iv
Ans. (C)
- Q.23** The pH of water is 7. Which of the substances found in nature are acidic ?
(A) saliva, chyme, urine, sea water (B) urine, sea water, chyme
(C) bile, saliva, blood plasma (D) urine, saliva, chyme
Ans. (D)
- Q.24** What is the appropriate combination of characters for protostomes ?
(i) spiral cleavage (ii) determinate development
(iii) blastopore forms anus (iv) radial cleavage
(v) indeterminate development (vi) schizocoelic coelom
(A) i, ii, vi (B) i, iii, iv, vi (C) i, iii, iv, vi (D) i, ii, iii
Ans. (A)
- Q.25** About 50% of energy in milk comes from -
(A) lactose (B) lactoproteins (C) fats (D) vitamins and minerals
Ans. (C)
- Q.26** In which group of animals the respiratory capability is limited by the volume of the buccal cavity ?
(A) Amphibians (B) Lizards (C) Penguins (D) Bats
Ans. (A)
- Q.27** If paraffin is injected in the roots of plants what is likely to happen ?
(A) Cells will die and there will not be any transport of water
(B) Apoplast route of transport of water will operate but symplast and transmembrane route will be blocked
(C) Apoplast and transmembrane routes will operate but symplast route will be blocked
(D) Symplast and transmembrane routes will operate but apoplast route will be blocked
Ans. (B)
- Q.28** When a caterpillar feeds on the leaves of a certain plant, a parasitoid wasp lays eggs in the body of it killing the caterpillar. If the caterpillar does not feed on these leaves the chances of the attack is very less. How can this be explained ?
(A) The wasps must be able to notice the caterpillar against the background of leaves
(B) The feeding caterpillar assures better food supply for wasp larvae than the non feeding ones.
(C) The wound on leaves must be producing a volatile signal attracting the wasp thus protecting the plant
(D) The feeding caterpillar excretes volatile chemicals that attract the wasp.
Ans. (C)

- Q.29** Fruits are often shipped in containers with higher CO₂ content to prevent -
(A) infestation of fruits by fungi (B) over ripening of fruits
(C) fermentation of sugar in fruits (D) insect and pests from spoiling fruits

Ans. (B)

- Q.30** Through the Lamarck's hypothesis of use and disuse has not been accepted, the influence of use/disuse is best demonstrated in an individual by -
(A) cornification of facial skin (B) bone remodeling
(C) muscle toning (D) sensory discrimination

Ans. (C)

- Q.31** Some insects beat their wings about 1000 times per second, faster than the transport of impulse by nerves. This is possible because -
(A) contraction of one set of muscles stretches the other set triggering its contraction
(B) they are involuntary muscles regulated by hormones and not nerve impulses
(C) flight muscles are like cardiac muscles generating impulses within themselves
(D) flexors and extensors have separate nerve innervation so that they are triggered separately.

Ans. (A)

- Q.32** Involuntary muscle fibres lack this complex required in the control of contraction of voluntary muscle fibres -
(A) actin-myosin (B) troponin
(C) sarcoplasmic reticulum (D) sodium calcium ion channels

Ans. (B)

- Q.33** Trace the pathway of perceiving a written word choosing from the parts of the brain below :
(i) motor cortex (ii) Wernicke's area
(iii) Primary auditory area (iv) primary visual area
(v) Broca's area (vi) Limbic association area

(A) iii → iv → ii → vi → v

(B) iv → vi → i → ii → v

(C) iv → ii → v → i

(D) iv → ii → vi → i

Ans. (C)

- Q.34** Best colourful plumage of male is expected under the condition of -
(A) limited territory and fewer females
(B) broad territory and abundant females
(C) broad territory and fewer females
(D) limited territory and abundant females

Ans. (A)

Q.35 Three hormones X, Y, Z show the following properties

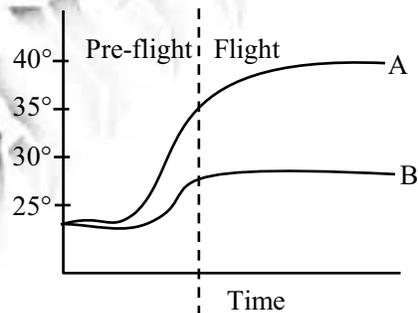
Hormone	Seedling Growth	Apical Dominance	Leaf Abscission	Site of Production
X	Promotes cell division and expansion			Embryo, young leaves, root and shoot apices
Y	Promotes cell expansion	Inhibits lateral buds	Inhibits Abscission	Embryo, young leaves, shoot apical meristem
Z	Promotes cell expansion	Promotes lateral buds	Inhibits Abscission	Roots

The correct sequence of hormones is -

- (A) X-Gibberelin, Y-Cytokinin, Z-Auxin
 (B) X-Gibberlin, Y-Auxin, Z-Gytokinin
 (C) X-Auxin, Y-Cytokinin, Z-Gibberelin
 (D) X-Auxin, Y-Gibberelin, Z-Cytokinin

Ans. (B)

Q.36 The graph shows the use of shivering-like mechanism to generate pre-flight heat in hawkmoths during cooler days. Changes as shown by curves A and B would respectively be observed in



- (A) abdomen and thorax
 (B) legs and thorax
 (C) thorax and abdomen
 (D) legs and wings

Ans. (C)

Q.37 Food products of a few industries are listed below.

- I. dairy products II. fruit juices III. bakery products

Match the major type of enzyme that is used in each of these industries.

- (A) I : rennin II : pectinase III : amylase (B) I : cellulase II : protease III : trypsin
 (C) I : sucrose II : amylase III : pectinase (D) I : amylase II : lipase III : protease

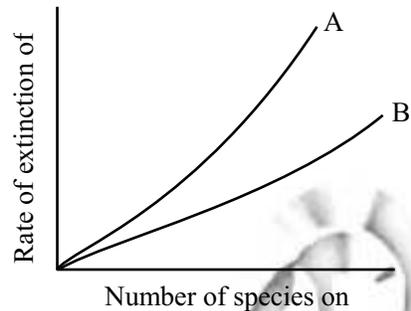
Ans. (A)

Q.38 Nitrifying bacteria and sulphur bacteria use inorganic sources for their requirement of energy and carbon. Thus they can be correctly classified as -

- (A) chemoheterotrophs (B) photoautotrophs
(C) chemoautotrophs (D) photoheterotrophs

Ans. (C)

Q.39 The rates of extinction of birds in two islands A and B are depicted in the graph below. What can one conclude about the size of the two islands and their distance from the mainland? Choose the most appropriate answer from the options.



- (A) A : large island near mainland B : small island far from the mainland
(B) A : small island far from mainland B : large island near mainland
(C) A : small island near mainland B : large island far from the mainland
(D) A : large island far from the mainland B : small island near the mainland

Ans. (B)

Q.40 A student wants to test the presence of starch in a leaf. Select the required steps and arrange them in the correct order -

- (i) boiling the leaf in ethanol (90%)
(ii) keeping the plant in dark
(iii) rinsing the leaf with hot water
(iv) addition of iodine solution
- (A) (ii) → (i) → (iii) → (iv) (B) (ii) → (i) → (iv) → (iii)
(C) (ii) → (iii) → (iv) → (i) (D) (iii) → (i) → (ii) → (iv)

Ans. (A)

Q.41 An animal showing characteristics such as reduced digestive system, several stages in the life cycle and a glycocalyx covering the body would most probably be a -

- (A) marine invertebrate (B) freshwater protist
(C) parasitic worm (D) deep sea dweller

Ans. (C)

Q.42 Listed below are certain proteins. Which of them are the only structural proteins ?

- (i) Collagen (ii) Trypsin
(iii) Keratin (iv) Actin
(v) Myosin (vi) Tubulin
- (A) i, iii, vi (B) ii, iv, v, vi (C) i, iii, iv, vi (D) i, iii, iv, v, vi

Ans. (C)

- Q.43** House fly or blow fly has simply to alight on potential substrate so as to know its food value, since it can -
 (A) taste food by sensory bristles on feet
 (B) visually detect the quality of food over short range
 (C) smell food by labial palps
 (D) solubilizes food by pouring saliva on it.
Ans. (A)
- Q.44** Choose the conditions that would cause the longest sensitive period for filial imprinting.
 (A) Faster development and limited food and protection
 (B) Slow development, limited food and protection
 (C) Slower development, adequate food the protection
 (D) Faster development, adequate food and protection
Ans. (B)
- Q.45** Blood vessels near the wound dilate and become more permeable in response to which material released from the damaged cells
 (A) interferons (B) histamine (C) heparin (D) antibodies
Ans. (B)
- Q.46** In a box, 6 red and 30 white beads were mixed. What are the chances of drawing red bead in two successive trails if the bead drawn first was not replaced ?
 (A) 31% (B) 16% (C) 14% (D) 2.4%
Ans. (A)
- Q.47** The odd one among the following is
 (A) cladode (B) phyllode (C) staminode (D) phylloclade
Ans. (C)
- Q.48** The phenotypic ratio in a back cross between a trihybrid and homozygous recessive parent would be
 (A) 1 : 1 (B) 1 : 1 : 1 : 1 (C) 1 : 1 : 1 : 1 : 1 : 1 (D) 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1
Ans. (D)
- Q.49** Which of the following characteristics of a flower would attract humming birds for pollination but not bees ?
 (i) Fragrant flowers (ii) Great amount of nectar
 (iii) Long tubular flowers (iv) Deep-seated nectary
 (v) Petals forming a lip for resting (vi) Yellow petals
 (A) (i), (iii) and (v) only (B) (ii), (iii) and (iv) only
 (C) (ii), (iv) and (vi) only (D) (i) and (ii) only
Ans. (B)
- Q.50** A student was observing the mouthparts of specimen M and N under the stereomicroscope. She observed that M had mouthparts suitable for siphoning and sucking while N had mouthparts for biting and chewing. M and N could most likely be -
 (A) M : butterfly N : mosquito (B) M : cockroach N : caterpillar
 (C) M : mosquito N : housefly (D) M : butterfly N : caterpillar
Ans. (D)

Q.51 In the evolution of man, which of the following was **not** involved ?

- (A) Progressive reduction in hair cover
- (B) Progressive increase in size of brain
- (C) Progressive development of erect posture
- (D) Progressive increase in mobility of facial muscles

Ans. (D)

Q.52 Lack of true coelom is a character shared by all the following animals except :

- (A) Leech
- (B) Planeria
- (C) Hydra
- (D) Round worm

Ans. (C)

Q.53 The erect posture of man is evident from :

- (A) delicate cervical vertebrae
- (B) lack of transverse processes in sacral vertebrae
- (C) massive centrum of lumbar vertebrae
- (D) fusion and reduction of coccygeal vertebrae

Ans. (C)

Q.54 The junctional complex between the adjoining cells responsible for the bulk transport of materials is :

- (A) desmosome
- (B) gap junctions
- (C) tight junctions
- (D) plasmodesmata

Ans. (D)

Q.55 Extracts from 0.5 gm muscle tissue of two different animals were dispensed in unlabelled tubes A and B for an experiment. During the course of the experiment, the tubes got mixed up. When analysed, it was found that tube B contained a large number of mitochondria as compared to the extract in tube A. This shows that the extract in tube B most probably belongs to -

- (A) human
- (B) seal
- (C) humming bird
- (D) snail

Ans. (C)

Q.56 Bryophytes can be compared with amphibians since both are :

- (i) autotrophic
- (ii) dependent on water for reproduction
- (iii) without endoskeleton
- (iv) devoid of impervious body surface
- (v) with separate sexes

- (A) (ii), (iv)
- (B) (i), (ii), (iv)
- (C) (ii), (iii), (iv)
- (D) (i), (iii), (iv)

Ans. (A)

Q.57 A protein to be selected for biochemical taxonomy should be -

- (i) common to all species involved in the study
- (ii) with largest possible molecular weight
- (iii) having highly conserved portions
- (iv) carrying out same vital function in the concerned species
- (v) non-antigenic
- (vi) bearing all essential amino acids

- (A) i, iii, iv
- (B) ii, iv, v
- (C) i, iii, iv
- (D) iii, v, vi

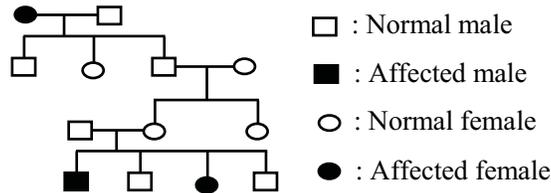
Ans. (C)

Q.58 All of the following are the examples of the effect of use and disuse of organs influencing their size (Lamarckism) except :

- (A) elongation of neck in giraffe (B) disappearance of limbs in snakes
 (C) disappearance of tail in man (D) disappearance of tail of tadpole of frog

Ans. (D)

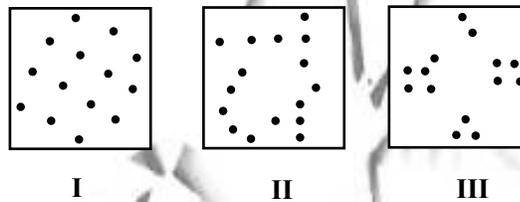
Q.59 Study the pedigree given below and assign the type of inheritance of the trait.



- (A) X-linked recessive (B) Y-linked (C) autosomal recessive (D) autosomal dominant

Ans. (C)

Q.60 European starlings (P) are birds that exhibit flocking behaviour while Red-winged blackbirds (Q) exhibit territorial behaviour. Refer to the representations I, II and III given below and choose the option that correctly depicts the patterns of distribution in these birds.



- (A) P : I Q : II (B) P : II Q : III (C) P : I Q : III (D) P : III Q : I

Ans. (D)

Q.61 Which of the following are the examples of passive immunity ?

- (i) Resistivity transmitted through mother's milk
 (ii) Immunoglobulin injected in a patient
 (iii) Semi killed pathogens introduced in the body
 (iv) Administration of antivenom
 (A) i, ii, iii, iv (B) i, ii and iv
 (C) i and iv (D) ii and iv

Ans. (B)

Q.62 The activity of wood lice (slow bugs) that are hygrophilic in nature, will be fastest in a biome with predominance of

- (A) liverworts, mosses and ferns (B) humus in moist subtropical forest
 (C) grasses in a highly productive meadow (D) semi-desert with scarce vegetation

Ans. (D)

Q.63 The pigment found outside the chloroplast is

- (A) anthocyanin (B) xanthophyll (C) chlorophyll (D) phycoerythrin

Ans. (A)

- Q.64** This group of animals exhibits dual intracellular as well as extracellular digestion
 (A) ciliate (B) porifera (C) cnidaria (D) nematode

Ans. (C)

- Q.65** Though the arthropods are segmented animals, which of the following groups exhibit little or no segmentation ?

- (A) Centipedes and millipedes (B) Prawns and lobsters
 (C) Ticks and mites (D) Bugs and beetles

Ans. (C)

- Q.66** Grasses that dissuade grazers by releasing cyanides do not suffer from the toxic effects themselves since

- (A) cyanogens are in the form of glycosides that get activated in the grazer on the digestion of glycoside
 (B) cyanogens remain stored in membrane bound vesicles
 (C) cyanogens are specific to the electron transfer chain of the grazers alone
 (D) cyanogens are detoxified rapidly in plant cells.

Ans. (A)

- Q.67** Cells of human blood can be arranged in a series of increasing number per cubic millimeter of blood as follows

- (A) erythrocytes < lymphocytes < platelets < basophils < neutrophils
 (B) basophils < lymphocytes < neutrophils < platelets < erythrocytes
 (C) lymphocytes < basophils < platelets < neutrophils < erythrocytes
 (D) neutrophils < basophils < lymphocytes < platelets < erythrocytes

Ans. (B)

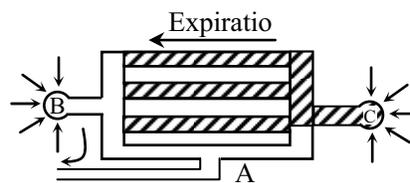
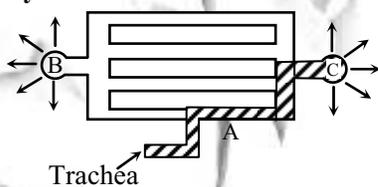
- Q.68** If a herbivorous tadpole of frog is forcefully fed on pieces of thyroid gland there is :

- (A) premature metamorphosis (B) delayed metamorphosis
 (C) no resorption of tail in metamorphosis (D) no detectable effect

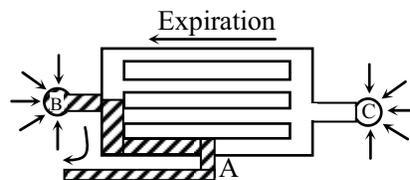
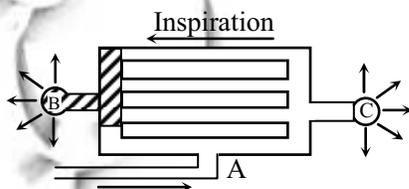
Ans. (A)

- Q.69** The accompanying diagram shows breathing in 2 cycles :

Cycle 1.



Case 2



The diagram depicts the respiratory system of :

- (A) frog (B) lizard (C) bird (D) aquatic mammal

Ans. (B)

- Q.70** In the above diagram a, b and c denote
 (A) parabronchi or lungs, anterior air sacs, posterior air sacs
 (B) central cavity, lateral cavity, alveoli
 (C) bronchi, bronchioles, alveoli
 (D) bronchioles, respiratory canals, alveoli

Ans. (A)

- Q.71** Two plants X and Y are showing association with fungus to form mycorrhizae. The table below indicates the details observed in roots of plants X and Y.

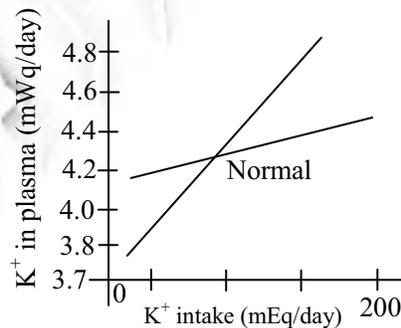
Sr. No.	Details	Plant X	Plant Y
1.	Growth of fungal hyphae into the cortex of root.	√	√
2.	Fungal hyphae invading apoplast	√	X
3.	Fungal hyphae forming arbusules (branched structures)	X	√
4.	Root hair	X	√

Plant X and Y can respectively be :

- (A) X : oak plant with ectomycorrhizae, Y : maize plant with endomycorrhizae.
 (B) X : oak plant with endomycorrhizae, Y : maize plant with ectomycorrhizae
 (C) X : oak plant with ectomycorrhizae, Y : maize plant with both endomycorrhizae and ectomycorrhizae
 (D) X : oak plant with both endomycorrhizae and ectomycorrhizae, Y : maize plant with ectomycorrhizae

Ans. (A)

- Q.72** The accompanying figure depicts the changes in potassium intake in extracellular fluid $[K^+]$ under normal condition and condition 'X'. What can be the condition 'X' ?



- (A) blocked ADH feedback
 (B) blocked aldosterone feedback
 (C) blocked stretch response reflexes
 (D) blocked atrial natriurectic hormone feedback

Ans. (B)

- Q.73** Red algae growing in deeper water have :
 (A) as much chlorophyll as the green algae but phycoerythrin makes them look red
 (B) much less amount of chlorophyll and large amounts of phycoerythrin
 (C) only phycoerythrin as photosynthetic pigment
 (D) both chlorophyll and phycoerythrin in almost the same quantities.

Ans. (A)

Q.74 Filiform apparatus found during development in angiosperms is a thickening on the :
(A) antipodals (B) polar nuclei (C) egg (D) synergids

Ans. (D)

Q.75 Oxytocin is released by pituitary in response to :
(A) foetal movements (B) dislodging of mucus plug from cervix
(C) uterine contractions (D) secretions from placenta

Ans. (C)

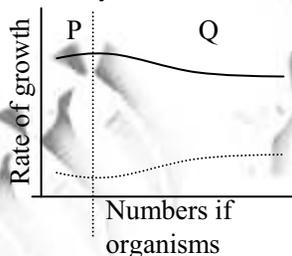
Q.76 In a biomolecule, bond length and bond energy share the following relationship :
(A) They are directly proportional (B) Inversely proportional
(C) Hyperbolic relationship (D) Parabolic relationship

Ans. (B)

Q.77 One of the critical factors that limits the cell size of prokaryotic cell is :
i. surface/mass ratio ii. surface/volume ratio
iii. surface area of the cell iv. environmental stress
(A) ii and iii (B) iii and iv (C) i and iv (D) i and ii

Ans. (D)

Q.78 The relationship between the two organisms when grown individually (Section P) and grown together (Section Q) is shown in the graph. The relationship is most likely to be :



(A) commensalism (B) parasitism (C) mutualism (D) amensalism

Ans. (B)

Q.79 When oil is added to water and the mixture is shaken, an emulsion containing droplets of oil dispersed in water is formed. This can be due to :

(A) Van Der Waals interaction (B) hydrophilic interaction
(C) amphiphilic interaction (D) hydrophobic interaction

Ans. (D)

Q.80 Carotenoids are generally long chain unsaturated hydrocarbons. Which of the following function's correlate's with the structures ?

i. They can absorb light of higher wavelength.
ii. It allows carotenoids to transfer energy to chlorophyll-a molecule
iii. To reduce free radicals.
iv. Long hydrocarbon chain allows carotenoids to protect chlorophyll-a from direct sunlight by absorbing excess light energy.

(A) Only i. (B) iii and iv (C) Only ii. (D) i and iii.

Ans. (B)